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INDUSTRIAL ARTS AND HIGH SCHOOL DROPOUTS, A REPORT PREPARED AT THE REQUEST OF THE HONORABLE DALLAS WOLFE, STATE SENATOR, 15TH DISTRICT FOR THE WEST VIRGINIA SENATE EDUCATION COMMITTEE.

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DESCRIPTORS- \*INDUSTRIAL ARTS, \*DROPOUTS, DROPOUT PROBLEMS, \*EDUCATIONAL IMPROVEMENT, DROPOUT CHARACTERISTICS, CURRICULUM, \*EDUCATIONAL PROBLEMS, VOCATIONAL EDUCATION, HIGH SCHOOLS, WEST VIRGINIA,

SEVERAL PROPOSALS FOR ALLEVIATING THE DROPOUT PROBLEM ARE PRESENTED. STUDENTS LEAVE SCHOOL BECAUSE OF FAILURE AND RETARDATION IN SCHOOL, DISLIKE OF SCHOOL, HOME CIRCUMSTANCES, MARRIAGE, CONFLICTS WITH TEACHERS, FEELINGS OF REJECTION, NEED TO WORK, MILITARY SERVICE, AND HEALTH. WHILE IN SCHOOL, THE POTENTIAL DROPOUT IS USUALLY SHUNTED INTO A CURRICULUM AREA WHERE HE CAUSES THE FEWEST ADMINISTRATIVE PROBLEMS, AND UNLESS HE SUCCEEDS THERE, HE PROBABLY GIVES UP AND LEAVES SCHOOL. VOCATIONAL EDUCATION AS A SOLUTION TO THE DROPOUT PROBLEM IS NOT FEASIBLE BECAUSE THE SMALL SCHOOLS OF WEST VIRGINIA CANNOT SUPPORT BROAD VOCATIONAL PROGRAMS. A REVIEW OF RECENT STUDIES LED TO NO CONCRETE EVIDENCE OF THE VALUE OF ANY NONACADEMIC SUBJECT OVER OTHER SUBJECTS IN HOLDING POWER. PUBLISHED STATEMENTS AND PERSONAL CONTACTS WITH A REPRESENTATIVE NUMBER OF EDUCATORS INDICATED THE POSSIBILITY THAT INDUSTRIAL ARTS COULD HAVE HOLDING POWER. AN INDUSTRIAL ARTS PROGRAM CAN BE STRUCTURED TO SERVE ALL STUDENTS. PROPOSALS ARE--(1) A BROAD GENERAL SHOP PROGRAM SHOULD BE IMPLEMENTED IN JUNIOR HIGH SCHOOLS, (2) GENERAL SHOPS IN HIGH SCHOOLS SHOULD BE ADEQUATE SO THAT ALL WHO DESIRE CAN ENROLL, (3) UNIT SHOPS SHOULD BE ESTABLISHED WHERE STUDENTS' NEEDS JUSTIFY THEM, (4) ADEQUATE FUNDS SHOULD BE PROVIDED, AND (5) A STATE SUPERVISOR OF INDUSTRIAL ARTS SHOULD BE APPOINTED TO SEE THAT THESE PROVISIONS ARE CARRIED OUT IN EACH DISTRICT. (EH)

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INDUSTRIAL ARTS  
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A REPORT PREPARED AT THE REQUEST OF  
THE HONORABLE DALLAS WOLFE, STATE  
SENATOR, 15th DISTRICT FOR THE WEST  
VIRGINIA SENATE EDUCATION COMMITTEE

by

THOMAS J. BRENNAN

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## INTRODUCTION

In recent years much publicity has been focused on the dropout problem facing our schools. This is a problem of critical proportion in a number of states. In a study made by the National Education Association, West Virginia appeared 11th among the 50 states in its percentage of dropouts. That is to say, 39 states had a higher percentage of students who were enrolled in the eighth grade in 1951-52 and who completed their high school program in 1955-56 than West Virginia.<sup>1</sup>

A number of state agencies, among them the West Virginia Department of Education and the West Virginia Education Association have done considerable research in this area. The West Virginia Education Association has published the report of a workshop on school dropouts under the title "Improving the Holding Power of the Public Schools." This publication shows the dropout problem as it appeared in West Virginia in 1935-36 and compares it with the problem in 1948-49. It offers some concrete suggestions for improvement, some of which have been undertaken in more recent years. In spite of the gains in the holding power of the schools shown in this publication, the Superintendent of Schools reported in March 1962 that the percentage of dropouts in the state is still at the alarming figure of 47.5%. Almost one out of every two students who completed the sixth grade in West Virginia schools drops out of school before completing high school. This picture is distorted somewhat since many of the pupils included in Superintendent Smith's data had moved away from West Virginia during the 6-year period. The West Virginia Education Association feels that this is a static condition however since there has also been some in-migration in some areas of the state.<sup>2</sup>

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<sup>1</sup>Bianchi, Evelyn S. High School Dropouts. National Education Association of the United States, Washington 6, D. C.

<sup>2</sup>Baldwin, Margaret. Improving the Holding Power of the Public Schools, West Virginia Education Association, Charleston, 1950, p. 12.

There may be more authentic data coming from the pilot program which was undertaken in Mercer County. At the time of writing, this material was not available. However, the situation is still grave enough to warrant an all out effort by state agencies to alleviate the problem.

This report is not intended to be a statistical analysis of the dropout problem nor is the intent to present much of the factual material available on the subject. Such material is readily available and most interested people are cognizant of it. During the course of this discussion some factual material will be introduced in the interest of economy of time, particularly where it enhances the report. The main purpose of this report is to present several proposals for consideration which may aid in alleviating the dropout problem. It concerns itself with one area of the general education curriculum, Industrial Arts.

#### WHY STUDENTS LEAVE SCHOOL

The West Virginia Education Association report states "If the curriculum in the junior high school is to challenge pupils to continue their education, it must be one that meets the varied needs and interests of the urban and rural boy and girl; of the low, average, and superior pupil. Home economics, commercial, industrial arts and science programs must be expanded so they will meet both the present and future needs of youth."<sup>3</sup>

Concerning the senior high school, the report says, "A wide variety of special courses for non-academic students can be a strong factor in holding many who would otherwise leave school before the twelfth grade."<sup>4</sup>

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<sup>3</sup> Ibid. p. 17.

<sup>4</sup> Ibid. p. 18.



Superintendent Smith<sup>5</sup> lists the major causes why students leave school as:

1. Failure and retardation in school
2. Dislike of school
3. Home circumstances
4. Marriage
5. Conflicts with teachers
6. Feelings of rejection.

A comparison of these reasons to those shown in a report of a study on the Early Employment Experiences of Youth in Seven Communities 1952-57<sup>6</sup> (including our own Harrison County) shows considerable similarity.

1. Adverse school conditions (could include 1, 2, 5 and possibly 6 above)
2. Marriage
3. To work
4. Military Service
5. Adverse home circumstances (3 above)
6. Health.

Let us take a second look at some of Superintendent Smith's reasons.

1. Failure and retardation in School.

This may stem from many causes. High on the list is the fact that a great number of dropouts simply have not acquired the degree of reading ability which would have made school interesting and manageable.<sup>7</sup> In some cases this lack of reading skill may be traced to a

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<sup>5</sup>Smith, Rex. Personal Letter, March 15, 1962.

<sup>6</sup>From School to Work. United States Department of Labor. Bureau of Labor Statistics, Government Printing Office 1961, p. 6.

<sup>7</sup>Ibid. p. 6.

low mental ability. However, it is reliably reported in this same study that two-thirds of the dropouts studied had IQ's between 85 and 109. That is to say that they were in what is broadly considered to be the normal range.<sup>8</sup> Most studies made along these lines tend to substantiate this position.

## 2. Dislike of School

Most researches seem to point to this fact as a major cause of school dropouts. It is a broad category since it may stem from (1) above; it may be a reflection of boredom with school subjects, particularly when they have not been challenged or the curriculum has not reflected their specific needs. It may reflect a dislike for teachers (No. 5 of Smith's list) or it may stem from other general complaints.

## 3. Home circumstances

Despite the fact that a large number of dropouts come from low income homes, economic need does not seem to be a major reason for dropping out. The fact that these dropouts received little or no encouragement to stay in school from their parents or that a large proportion of them came from broken homes seem to reflect the home circumstances more directly responsible for their dropping out.<sup>9</sup>

## 4. Marriage

Marriage is a major reason for girls dropping out of school. Although few boys will admit to this reason it may well be a hidden motive for the boys who drop out "to go to work." Although economic need is not a major cause for dropping out, the need for self-

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<sup>8</sup>Ibid. p. 6.

<sup>9</sup>Ibid. pp. 5-6.

support as a prelude to courtship and marriage may have considerable effect on the boys who do not finish school. The study shows that one-fourth of the girl dropouts gave marriage as the chief contributing reason. At the same time almost one-fourth of the boys gave work as the reason why they left school.

In making a spot analysis of various pupils, Superintendent Smith reports the following condition or conditions exist.<sup>10</sup>

1. Dropouts are generally of lower intelligence and not college material. (This would seem to point to the need of a curriculum which would be of value in helping these students enter the world of work.)
2. They have reading difficulties.  
(This point appears with such regularity in most researches that it must not be overlooked. Adequate reading instruction in the grades is most important. Potential dropouts who are deficient in reading skills must be given remedial reading instruction if they are to remain in school. In addition, this difficulty might be interpreted to indicate the need for a less academic curriculum for these pupils.)
3. They have experienced grade failures.
4. They generally are retarded.
5. They are in financial need.
6. Their parents are not interested in school work.

(Since many of these reasons (3 through 6) have already been commented on earlier, no further comment is indicated at this point.

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<sup>10</sup>Smith, Rex. Personal Letter, March 15, 1962.

7. They transfer frequently from school to school. (This is probably due to economic conditions which necessitate the moving of the wage earner to find employment. It could also be an indication of broken homes, of lack of parental control and other reasons.)

The United States Department of Labor points out a fact which may have significance for later developments in this report.<sup>11</sup>

"During their school years, almost all the graduates, both boys and girls, had completed at least one vocational course either commercial or industrial. This was also true for nearly two-thirds of both boy and girl dropouts (1600 of them). But there was an important difference between the graduates and the dropouts in the number of courses taken. For example, three fifths of all the boy graduates had completed four or more industrial arts courses, compared with less than one-fifth of all the boy dropouts."

The discussion to this point has been primarily to lay the foundation for the major portion of this report. While three sources of information are mentioned most frequently, this should not be construed to indicate that they were the only sources studied. They are reported here since they reflect West Virginia conditions. Two of the sources are direct West Virginia reports while the third included one county in West Virginia in its findings. Other studies reviewed reflected substantially the same information related here. Agreement was not one-hundred percent. However, there was sufficient similarity in the findings to make the three sources used valid for the purpose of this report.

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<sup>11</sup>From School to Work. op.cit. pp. 6-7.



#### WHAT EDUCATIONAL LEADERS THINK AND SAY ABOUT THE DROPOUT PROBLEM.

An attempt was made to collect significant opinions from educational leaders throughout the United States about the significant contributions industrial arts might make in alleviating the dropout problem. It is fully appreciated that valid research should be as objective as possible. Educators naturally have their preferences. These preferences (or biases) usually reflect their background and training. Since this report is being developed about the industrial arts potential in the dropout problem, it is natural that the thoughts of many industrial arts leaders would be included in this section. However, a number of non-industrial arts educational leaders were included to render any prejudice which might be reflected as ineffectual as possible.

#### TEACHER EFFECTIVENESS AND PRACTICAL ARTS

Many industrial arts instructors have had the rewarding experience of knowing that their program has been instrumental in keeping a boy, and sometimes a girl, in school when otherwise he might have dropped out. While this might be said of numerous academic teachers, there is a greater likelihood that this is true of those teachers who offer the so-called non-academic subjects. Such subjects as art, home economics, industrial arts, agriculture and physical education, by their very nature permit the instructor to work more closely in a physical sense with the students. This aids in the development of a feeling of kinship which encourages the student to come to the instructor when he is in trouble.

In most of these subjects, it is possible for the instructor to more readily adapt his program to the individual differences among the students. This adaptability leads the students to have successful learning experiences.

It should not be construed to indicate that these subjects are not as exacting or that they are not taught on the same plane as the more academic subjects. When these areas are taught properly they are just as demanding as any school subject. They usually involve greater student participation than the more academic subjects. This in turn leads to a greater ability to communicate between teacher and student. The student feels he is accepted and he "likes" the teacher. This feeling is a material asset in encouraging the student to remain in school.

#### RESEARCH IN INDUSTRIAL ARTS

A review of recent studies in industrial arts education led to no concrete evidence of the value of industrial arts (or any other so called non-academic subject) over other subjects in holding power. Research of this type is difficult to do and may be the reason why it is not available. A different approach seemed to be indicated at this point.

A representative number of educators were either contacted personally or their published statements were reviewed in an attempt to find a clue to the holding power of industrial arts. Ample evidence of the feeling of these leaders is available to indicate that this is a possibility. Most of them feel the practical arts can at least offer an assist in this direction. To be more specific, a few such statements are presented at this time.

Marshall L. Schmitt

Specialist for Industrial Arts

Division of Elementary and Secondary Education

Department of Health, Education, and Welfare

United States Office of Education writes,

"I, too, am very much interested in the over all dropout problem and the part industrial arts should take in solving it. It seems to me that a good comprehensive industrial arts program in any school would provide for the needs of many potential dropouts. The industrial arts program should provide opportunities to meet the needs of students over a wide range of abilities, for example, courses should be designed to challenge the upper ability student as well as the slow learner type. When the program is comprehensive, this is possible. In the teaching of such courses, constant vigilance must be maintained to keep interest high and the work challenging no matter what the student's ability level is. Teaching methods must also be flexible."

Donald P. Hoagland

Coordinator of Industrial Arts and Vocational Education

Union County Regional High Schools

Springfield, New Jersey

"We, in the Union County Regional High School district feel certain that our comprehensive industrial arts program contributes significantly to our extremely low dropout rate."

Herbert Siegel

Director, Industrial Arts

Board of Education, City of New York

"Studies of dropouts indicate that economic necessity is not the most compelling reason for leaving school. Lack of interest in school work is listed prominently as an important reason for failing to graduate. The lack of interest in traditional courses may also be listed as an important element in the low achievement level attained by many youths. Courses in metal work, woodwork, drafting, transportation, electricity, graphic arts, or ceramics very

often provide the incentives for a youngster to remain in school. The pride of accomplishment, the satisfaction of receiving passing grades in courses which are meaningful to them frequently provide the only spark in the entire school curriculum for igniting an interest in some pupils so they attain a high school diploma."<sup>12</sup>

Seymour L. Wolfbein

Deputy Assistant Secretary

United States Department of Labor

"The industrial arts program has a key and critical role to play in the subject we are discussing. (Dropouts and Industrial Education) If done creatively and imaginatively, it gives the young person an arena in which to try out his interests and his talents in his field, and in imparting basic attitudes and in emphasizing the dignity of work. Here again we have many concrete and specific examples where a good industrial arts program, combined with good career guidance can be very effective in reducing the potential dropout rate."<sup>13</sup>

These few comments should serve to point out the possibility of industrial arts aiding materially in the dropout problem. More could be listed for foreword looking, educational leaders throughout the country are investigating and expressing their views in this respect. It would seem that West Virginia could profit much by following the examples of others. This will be emphasized to a greater extent later on in this report.

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<sup>12</sup> Siegel, Herbert. "The Imperatives of the High School Industrial Arts Program." The Power Tool Instructor, Vol. 12 No. 2, Fall Issue 1962, p. 9.

<sup>13</sup> Wolfbein, Seymour L. "Dropouts and Industrial Education", Industrial Arts and Vocational Education, Vol. 51, No. 5, May 1962.



## **SOME CONDITIONS IN WEST VIRGINIA WHICH AFFECT THE SOLUTION OF THE DROPOUT PROBLEM**

One of the more obvious approaches to this problem would seem to be the expansion of the vocational education programs throughout the state. The President's Panel of Consultants on Vocational Education has made its report to him and it is assumed he is incorporating their findings in his message to the next Congress. Among their proposals are recommendations for approximately doubling the present federally supported vocational education programs. West Virginia will naturally come into its share of this expansion. This will materially help the situation, particularly the youths who are presently out of school and unemployed adults with the retraining programs to be expanded. Area vocational schools can aid still further for youths still in school.

## **VOCATIONAL EDUCATION NOT THE ANSWER**

One simple fact is evident, however, in that the very nature of the school system in West Virginia militates against an effective solution to the dropout problem. Most high schools in West Virginia are small in size (less than 500 students). Schools of this type cannot offer broad vocational programs economically. Area vocational schools, whereby several counties or school districts band together to operate a comprehensive vocational program would seem to be a better solution. In this program students are either transported from the surrounding area or attend as resident students. This program is to be expanded under the recommendations of the President's Panel of Consultants.<sup>11</sup> At best, even when expanded, it is estimated that less than one-fourth of the potential dropouts will be aided under this program.

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<sup>11</sup> Education for a Changing World of Work, United States Department of Health, Education and Welfare, Office of Education, Government Printing Office 1962, p. 19.

Except in certain urban areas, West Virginia is not industrialized enough, nor are there enough large centers of population to absorb the vocationally trained students to be trained under an expanded program. Many of them who are trained in our present programs must leave the state to find employment. This must not be a determining factor for this expansion because the individual himself must be considered first. Likewise the nation as a whole will gain in the increase in numbers of trained workers entering the labor market. In addition, it is hoped that there will be an expansion in industry in West Virginia.

#### WHAT IS THE SOLUTION

Obviously, there is no panacea for the dropout problem. Its solution demands assistance from numerous quarters. The cooperative school-work plans will aid materially in training high school students for the world of work. These are very good and there are numerous examples in the state where these programs have materially contributed to the welfare of our student population. Vocational education will also aid to some extent. However, vocational education constantly screens off the youngster who is a slow learner. He is most often relegated to the general education program. This neither equips him for a high education nor trains him for employment.<sup>15</sup>

The potential dropout with the socio-economic background from which he usually stems is often left by the wayside. When he is forced to remain in the general education program he experiences difficulty with traditional courses. He is usually shunted into certain curriculum areas where he will create the least administrative problem. Unless this area provides him with successful learning experiences he usually gives up and leaves school.

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<sup>15</sup>Siegel. op. cit. p. 9.

An investigation of researches made in West Virginia and other states who have had high dropout problems should offer some clues to be followed in the solution of the problem.

Mention has already been made of the suggestions offered by the West Virginia Education Association in its pamphlet, Improving the Holding Power of the Public Schools. For the purpose of this report, its suggestions concerning the junior and senior high schools, of making the curriculum challenging to pupils so they will remain in school offers a very fine point of departure for a brief discussion of the industrial arts program.

#### INDUSTRIAL ARTS

Historically, industrial arts has held an unenviable position in the school curriculum. Manual Training, the first stage in the development of industrial arts with its emphasis on the development of one or two manual skills to the exclusion of other inherent factors led to the conviction on the part of numerous educators that it had little educational value. Manual Arts, the next stage, did little more than add appreciation to its philosophy. This did little to alter the opinions of these educators. It was not until the term Industrial Arts was adopted and the program revised to include the present offerings that it began to take on an aura of educational respectability. Nevertheless, it has had an extremely difficult time to keep its head above the educational waters. Administrators still tend to treat it as the proverbial "dumping ground." They demand of it miracles of maintenance and expect its instructors to exist on less than \$200 a year. (This is a generous estimate of the average allocation for supplies and educational materials provided in West Virginia during past years.) In numerous instances they expect the instructor to be able to return a dollar for every dollar advanced for materials.

In retaliation industrial arts instructors have adopted a defensive attitude. They resist the dumping of unwanted students into their classes. They are forced to go to great lengths to resist the tendency to make maintenance shops of their laboratories. Consequently, they often do not appear as contributing members of the educational team in the schools.

The average age of the industrial arts teacher in West Virginia is increasing out of proportion to the regular numerical increase, since most young teachers (those most adequately trained to meet the needs of teaching industrial arts in this fast changing technological age) leave the state as soon as they complete their education. Laboratories are being closed for lack of trained teachers. Academic teachers are being hired to take the place of industrial arts instructors so as not to lose the teacher allocation. In addition, very few industrial arts laboratories throughout the state are adequately equipped to meet the present and future needs of the students. These laboratories simply do not attract new teachers. Couple these factors with the low salary scale of teachers in West Virginia and the future of industrial arts education in West Virginia looks very bleak.

In spite of this background the people of West Virginia need a broad industrial arts program as much or more than they need any other educational endeavor. In its projection of manpower needs, the federal government estimates that "26 million workers will start work in 1960-70. Their attitudes, skills and education must match the needs of a changing economy. The eight out of ten who will not complete college must gain occupational competence in other ways. Vocational and technical education prepare youth for employment."<sup>16</sup>

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<sup>16</sup>Education for a Changing World of Work. op. cit. p. 23.



We have already noted that vocational education will not be able to solve the needs of all the youth in West Virginia. One suggested solution is a broad, well implemented, program of industrial arts in every secondary school in West Virginia.

"Where secondary schools have adequate industrial arts education pupils may acquire numerous skills which meet entrance requirements for a variety of occupations. This is in contrast to specific trade training. Examples of basic skills which should be acquired in industrial arts courses are listed below.

|                     |                                  |
|---------------------|----------------------------------|
| Measuring           | Working Under Supervision        |
| Estimating          | Technical Vocabulary             |
| Care of Basic Tools | Operating Basic Power Tools      |
| Safety              | Maintaining machines             |
| Use of Basic Tools  | Reading and making working plans |
| Neatness            | Repetitive Operations            |
| Planning            | Drilling                         |
| Working Alone       | Assembling                       |
| Working in Groups   | Lubrication                      |
| Grinding            | Household maintenance            |
| Polishing           | Electrical repairs               |
| Filing              | Engine servicing                 |

Many industrial leaders have stated that more young people be sent to them with basic knowledge and understandings of a variety of basic tools, materials and processes and that they would prefer to train their workers themselves in the specific skills required for the job. Industrial arts

courses provide opportunities for learning these skills and acquiring this basic information through experience in its shops."<sup>17</sup>

Schenck found, in his recent research, that numerous teacher educators and industrial arts supervisors across the nation are in effect changing their philosophy of industrial arts education to include some aspects of vocational education.

"Industrial arts should continue to be defined as general education throughout the senior high school grades. But the vocational aspect of the objectives of general education should be given more emphasis; perhaps at the expense of leisure time and consumer competency objectives."

"Industrial arts in the senior high school may cease to be defined as general education for individual students, depending on what use will be made of the knowledge gained. It should be stressed however that any such re-definition is not a matter of grade level.

"Industrial arts can be vocationally orientated in the senior high school grades for individual students by giving areas more depth of subject matter and by reducing the variety of areas at the upper grade levels. This individual orientation may also be based on the amount of industrial arts the student has had previously. Community employment opportunities, whether a school system already has a vocational program and whether it has a need for a vocational program must also enter into the decision." "Drafting, printing, electricity and electronics especially lend themselves to vocational orientation. But any industrial arts area has possibilities if greater depth is added and exploratory activities are reduced."<sup>18</sup>

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<sup>17</sup>Siegel. op. cit. p. 10.

<sup>18</sup>Schenck, John P. A Re-Evaluation of Industrial Arts as General Education in Relationship to its Definition as General Education, Graduate Unpublished Research Paper, University of Nebraska, 1962.

That there are precedents for this type of approach to the dropout problem can be quickly determined by an examination of the industrial arts program in the Union County Regional High Schools of New Jersey. A copy of this curriculum is appended to this report.

That nationally prominent educators are also thinking along these lines may be seen by an examination of Dr. James B. Conant's recent book, Slums and Suburbs.<sup>19</sup> In this book he describes his objections to industrial arts in the senior high schools because of their general nature and makes a strong plea for specialized courses which might lead to vocation competence in selected areas.

"There is an increasing number of pupils who remain in school taking courses not of their own choosing but because of parental pressures. Lack of interest in specific subjects and consequent inability to establish long range goals often result in an aimless drifting in school. Many of these boys and girls are working and achieving far below their potentials. For many of these pupils, industrial arts courses open a new range of experiences. Many industrial arts teachers report that with proper guidance these youngsters very frequently become the best workers in their shops and that in many cases these same youngsters elect courses in college preparatory work in their senior years in order to qualify for admission. In some cases, these pupils never contemplated college, but with the renewed confidence that many of them gain as a result of their success in their sophomore or junior years, they set goals for themselves which are in keeping with their intelligence and ability. In a recent article, Dr. Morris Meister, President of the Bronx Community College, reported that many of these late bloomers and under

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<sup>19</sup>Conant, James B. Slums and Suburbs. New York, McGraw-Hill Book Company. 1961, p. 49; p. 108.

achievers are good college risks. Industrial arts teachers are proud of their efforts in encouraging and directing boys and girls to 2- and 4-year colleges." <sup>20</sup>

#### THE GIFTED STUDENT

"In recent years there has been a marked growth in the number of academic high schools in which the Industrial Arts Department have been offering courses on a high level for boys and girls interested in science and technological careers.

Experiences in drafting--the basic language of the engineer and the technician--must be required of all students interested in careers in the technical fields. There is no reason for students in the academic high school to be denied opportunities given those students in the special high schools to experience the pre-engineering and science shop courses which are presently mandated in these special high schools. Today, intense national concern with the ever increasing shortage of engineers and technicians suggests that such a curriculum program is of inestimable value.

Two important trends in colleges of engineering are closely related to these gifted pupils and should be mentioned here. First, because of the newer thinking at some colleges, engineering specialities are being postponed until the graduate years, causing undergraduate diplomas to be called 'engineering sciences.' As a result, less time is likely to be available for training in the graphics and engineering drafting, and in courses in industrial laboratories.

Second, and possibly as a result of the first thought, a greater number of colleges are suggesting that applicants have a course or courses in drafting and/or other Industrial Arts subjects. Revealed in a perusal of

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<sup>20</sup>Siegel, op. cit. p. 10.



representative colleges offering work in engineering and architecture, are recommendations that applicants offer these courses in their high school records. Some of these colleges are:

California Institute of Technology  
Carnegie Institute of Technology  
City College of New York -- (Architecture)  
Cooper Union  
New York University -- (Engineering)  
Polytechnic Institute of Brooklyn  
Rensselaer Polytechnic Institute

The entire school profits from a comprehensive industrial arts program. The school tone is generally improved by not scheduling disinterested reluctant learners to "hard core" subjects which they generally fail and in which they frequently disrupt instruction. Furthermore, brighter students can have an opportunity to elect courses in engineering drafting and Industrial Arts science techniques shops "21

#### THE PROPOSAL

With the information of this report as a background the following proposals are offered for consideration.

1. That a broad general shop program is implemented for the junior high schools in West Virginia.

West Virginia currently specifies industrial arts for boys in junior high school. This requirement should be extended to girls.

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<sup>21</sup>Siegel. op. cit. p. 10.

"Except for teenage girls (most of these still in school) and women 65 or over (most of them either retired or past working age) at least two out of every five women in 1970 will be in the labor force."<sup>22</sup>

This proposal does not mean merely opening the present school shops to girls. It implies an industrial arts laboratory in every junior high school in West Virginia sufficiently large to offer a comprehensive general shop program. It also implies that this general shop be staffed and equipped adequately to permit a broad general education program in industrial arts for all junior high school youth.

2. That the senior high schools of West Virginia be equipped with a general shop sufficiently large and staffed and equipped adequately to offer, on an elective basis, a general education program for every school youth who desires it.
3. That, in addition to the general shop elective program in the senior high schools, facilities be provided, either in the general shop or in separate unit shops for instruction in depth in selected shop areas. These should reflect the needs of youth involved and should in turn reflect local and state manpower needs.
4. That adequate funds be provided for the implementation and staffing of these industrial arts programs.

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<sup>22</sup>Manpower Challenge of the 1960's. United States Department of Labor, United States Government Printing Office, Washington, D. C. 1961.

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5. That a state supervisor of industrial arts be appointed whose responsibility it will be to see that these provisions are carried out in each school district.

In addition, it should be his responsibility to coordinate curriculum development, initiate an in-service teacher improvement program and conduct such research as is necessary to keep industrial arts in West Virginia at the current national developmental level.

Respectfully submitted

Thomas J. Brennan

Professor of Education

Coordinator of Industrial Education

West Virginia University

## APPENDIX I

### UNION COUNTY REGIONAL HIGH SCHOOLS

#### DEPARTMENT OF INDUSTRIAL ARTS AND VOCATIONAL EDUCATION

Donald P. Hoagland  
Coordinator

#### COURSE OFFERINGS

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##### Industrial Arts

**Elective Program** - The elective program is open to all students and provides for experiences in the industrial arts with objectives related to general education. These courses are not vocational either in objective or in content. Students with vocational interest in industrial areas should enroll in the technically-oriented program when they reach the 11th year. It is hoped that experiences in industrial arts during the 9th and 10th grades will help the employment bound student to better make a vocational choice beginning the 11th year. All the elective industrial arts courses are minor subjects, without homework, and carry appropriate credit toward graduation. Elective electronics is the only elective industrial arts course for which there is a prerequisite. A student must have successfully completed one year of mathematics before enrolling in this subject.

|                |   |
|----------------|---|
| General Shop   | 1 - 1/2 yr.; 2 - 1 yr.                      |
| Graphic Arts   | 1 - 1/2 yr.; 2 - 1 yr.; 3 - 1 yr, 4 - 1 yr. |
| Mech. Drawing  | 1 - 1/2 yr.; 2 - 1 yr.; 3 - 1 yr, 4 - 1 yr. |
| Metal          | 1 - 1/2 yr.; 2 - 1 yr.; 3 - 1 yr; 4 - 1 yr. |
| Wood           | 1 - 1/2 yr.; 2 - 1 yr.; 3 - 1 yr, 4 - 1 yr. |
| Electronics    | 1 - 1 yr.; 2 - 1 yr.                        |
| Auto Mechanics | 1 - 1 yr.                                   |
| Machine Shop   | 1 - 1 yr.                                   |

##### **Technically -**

**Oriented Program** - Technically-oriented subjects are intended for the student who is planning to enter employment in the field of his specialization after graduation from high school. They are therefore vocational in intent, with emphasis upon development of skills combined with related technical information. These courses carry major credit and include meaningful homework assignments.

| Prerequisite   | Major Area     |                              |
|----------------|----------------|------------------------------|
| none           | Auto Mechanics | T-O 1 - 1 yr. 7½ points      |
| Wood 1         | Cabinetmaking  | (2 periods)                  |
| Mech. Dr. 1    | Drafting       |                              |
| Math. 1        | Electronics    | T-O 2 - 1 yr. 10 points      |
| Metal 1        | Machine Shop   | (3 period -                  |
| Graphic Arts 1 | Printing       | included 1 of related info.) |



## APPENDIX II\*

### A COMPARISON OF INDUSTRIAL ARTS EDUCATION AND VOCATIONAL EDUCATION

#### INDUSTRIAL ARTS EDUCATION

1. A definite phase of general education based on values derived principally from manipulative activity and study of materials.
2. Emphasis is placed upon exploration and participation.
3. Open to all students whether talented or not.
4. Pupils of all ages are eligible.
5. Aims best served through a variety of experiences with tools and materials representing many industries and crafts.
6. Equipment need not match industrial conditions.
7. Classes held for single and double periods.
8. Not reimbursed through special federal funds.
9. Teachers primarily prepared in teacher-training institutions.
10. Course content, length of time etc., determined by school representatives.
11. Projects are chosen with reference to student interest.
12. Standards of accomplishment based upon pupil growth rather than skilled work.

#### VOCATIONAL EDUCATION

1. A specialized program for the purpose of preparing students for remunerative employment.
2. Development of skill is emphasized.
3. Students selected with reference to the aptitude for the work.
4. Available to students or high-school age and older.
5. Concentration is on one trade or occupation.
6. Equipment should basically be parallel to industry.
7. Work carried on three or more hours per day in trade practice and related subjects.
8. Reimbursable through state and federal funds.
9. Teachers selected from the trades and given professional teacher training.
10. Course content and duration of courses arranged through advisory committees from industry, labor, and schools.
11. Work assignments based upon practices in the trade.
12. Standards of workmanship judged in the light of demands of the trade.

NOTE: This material is appended to show the basic differences between these two curriculum areas. While they are often thought of as being synonymous. They are actually two distinct educational programs.